2026 National Soil Moisture Workshop Agenda

June 9-10, 2026

University of North Carolina at Asheville

The Sherrill Center and Kimmell Arena, 227 Campus Dr., Asheville, North Carolina

Hosted by the National Oceanic and Atmospheric Administration's National Integrated Drought Information System (NIDIS) in collaboration with the U.S. Department of Agriculture and the U.S. Forest Service.

>> For virtual attendance: Zoom information is provided on the last page <<

Tuesday, June 9, 2026 – General Session Day 1 The Sherrill Center		
Time (ET)	**Topic**	**Speaker/Moderator**
8:30 a.m.	Welcome to Asheville and the Sherrill Center	Ronald Leeper– NC State University (NCSU) and Cooperative Institute for Satellite Earth System Studies (CISESS)
8:40 a.m.	Welcome, Natural Hazards and Soil Moisture Theme	Elise Osenga – CIRES, University of Colorado Boulder, NOAA National Integrated Drought Information System (NIDIS)
8:50 a.m.	National Coordinated Soil Moisture Monitoring Network (NCSMMN) Highlights and the Value of Soil Moisture in Hazards Planning	Michael Cosh – U.S. Department of Agriculture, Agricultural Research Service (USDA-ARS)
Session 1: Soil Moisture and Hazards | Moderator: Elise Osenga		
9:00 a.m. **Keynote Talk**	**Soil Moisture for Natural Hazards: Challenges, Data Gaps, and Emerging Data-Driven Opportunities**	**Ali Fares – Prairie View A&M University**
9:30 a.m.	Keynote Q& A	Moderator: Elise Osenga – CIRES, NOAA/NIDIS
9:40 a.m.	A Missing Variable in Flood Modeling: Soil Infiltration Capacity Driven by Soil Health	Stan Pace – CaluSolv
9:55 a.m.	Stakeholder Engagement and Applications Co-Development of NLDAS-3 for Drought Monitoring, Flood Prediction, and Beyond	Jonathan Case – University of Alabama Huntsville

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10:10 a.m.	**Coffee Break & Conversation Corners - Sponsored by Consolidated Safety Services**	
Session 2: Characterizing Drought | Moderator: Elise Osenga		
11:10 a.m.	Drought Research & Tools: Soil Moisture Products and Services Powered by ACIS	Natalie Umphlett – Northeast Regional Climate Center, Cornell University
11:20 a.m.	A SIMPL Framework for Drought Severity Assessment with Disparate Data	Vinit Seghal – Louisiana State University
11:30 a.m.	Assessing Soil Moisture Response to Drought from Historical and Soil Context	Ronald Leeper– NCSU, CISESS
11:40 p.m.	Soil Moisture in the New D3 Drought Tool	Zachary Hoylman – University of Montana
11:50 a.m.	Session 2 – Discussion and Q&A	Moderator: Elise Osenga – CIRES, NOAA/NIDIS
12:00 p.m.	Group Picture	Michael Cosh – USDA-ARS
12:15 p.m.	**Networking Lunch – Provided by METER Group**	
Session 3: Managing Agriculture Under Drought | Moderator: Michael Cosh		
1:15 p.m.	Will You Leave Your Field Barren? The Story of Drought, Soil Moisture, and Cover Crops	Sumita Sen – The Ohio State University
1:30 p.m.	Soil Moisture Dynamics Under Automated Surge Irrigation in Northern Utah	Ngoni Mufute – Utah State University
Session 4: Remote-Sensed Soil Moisture Products | Moderator: Michael Cosh		
1:45 p.m.	Validating NISAR Soil Moisture Products Inside Active Agricultural Fields	Simon Kraatz – USDA
1:55 p.m.	Advancing Precision Agriculture: High-Resolution Root-Zone Soil Moisture Retrieval Using UAV-Based L-Band Radiometry	Nikhil Raj Deep – University of Florida
2:05 p.m.	Session 4 – Discussion and Q&A	Moderator: Michael Cosh – USDA-ARS
2:25 p.m.	Closing Remarks and Poster Session Logistics	Michael Cosh – USDA-ARS

Session 5: Poster Session	
2:30 p.m. – 4:30 p.m.	**Poster Session** – Snacks and Networking
6:00 p.m.	No-Host Happy Hour at Hemingway's Cuba (4th Floor of the Cambria Hotel). *This is an unofficial gathering for anyone hoping to continue the day's conversations. Tables are not reserved, and drinks are on your own tab.*

Wednesday, June 10, 2026 – General Session Day 2 The Sherrill Center		
Time (ET)	**Topic**	**Speaker/Moderator**
Session 6: Forests & Fires | Moderator: Stephanie Connolly		
8:30 a.m.	Schedule for the Day & Other Reminders	Elise Osenga – CIRES, NOAA/NIDIS
8:40 a.m. **Keynote Talk**	**Burning Questions – Using Soil Moisture to Support Wildland Fire and Habitat Restoration**	**Mike Ward – The Nature Conservancy, North Carolina Wildfire Management**
9:10 a.m.	Keynote Q&A	Moderator: Stephanie Connolly – USDA Forest Service
9:30 a.m.	Soil Moisture in the Wildfire Continuum	Gabrielle Boisrame – Desert Research Institute
9:45 a.m.	Simulating and Partitioning Interception, Evaporation, and Transpiration by Vegetation Type in a Semi-Arid Montane Watershed in the Southwest Using HYDRUS-1D	Emory Ellis – Northern Arizona University
10:00 a.m.	**Coffee Break – Networking and Additional Poster Time**	
Session 7: New Technologies and Methods for Data Generation | Moderator: Ronald Leeper		
10:45 a.m.	Exploring the Limits of Complex Dielectric Through Intersections Technology	Chris Chambers – METER Group
10:55 a.m.	Modeling Soil Moisture from Rainfall at Network Sites	Victoria Walker – Embry Riddle Aeronautical University
11:05 a.m.	A Low Cost Fully Autonomous UAV-Based Soil Moisture Payload for Near-Surface Measurements	Hemanth Narayan Dakshinamurthy – South Carolina State University

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11:10 a.m.	Session 7 – Q&A and Discussion	Moderator: Ronald Leeper – NCSU, CISSES
Session 8: Integrating In Situ and Gridded Products | Moderator: Ronald Leeper		
11:20 a.m.	Panel Discussion – Comparing and Improving Modeled and Remote-Sensed Products ● A National-Scale Comparison of SOILWAT2 and SPoRT-LIS for Simulating Soil Moisture Dynamics ● Beyond the Bucket: Improving Soil Moisture Monitoring with Knowledge-Guided Machine Learning ● Utilizing In Situ Data For Satellite-Based Product Assessment and Application	Moderator: Ronald Leeper – NCSU, CISSES ● Ali Ashrafi – Oklahoma State University ● Zachary Hoylman – University of Montana ● John Bolten – NASA
11:50 a.m.	Distributed Hydrological Models for Soil Moisture Predictions from Point Sensors to Landscape Scale and Beyond: A Case Study from Pullman, Washington	Zamir Libohova – USDA-ARS
12:00 p.m.	Application of In Situ and Remote Sensing–Based Soil Moisture Indices for Agricultural Drought Assessment in the Southern Great Plains	Gebrekidan Tefera – Prairie View A&M University
12:10 p.m.	Exploiting the Relationships Between In Situ Soil Moisture Data and Remotely-Sensed Vegetation Indices to Improve Oklahoma's Soil Moisture Mapping System	Arturo Flores – Oklahoma State University
12:20 p.m.	Session 8 – Q&A and Discussion	Moderator: John Bolten – NASA
12:30 p.m.	NCSMMN Leadership in Soil Moisture Award – Presentation	Micheal Cosh - USDA-ARS
12:45 p.m.	**Lunch – Lunch Provided** **Brainstorming Session: What Is the Next Big Thing for Soil Moisture? (1:15 p.m.)**	
Session 9: Advancements in Observation Networks | Moderator: Elise Osenga		
1:45 p.m.	Benchmarking Soil Moisture Errors Using SCAN and USCRN Networks	Michael Cosh – USDA-ARS

1:55 p.m.	Nationally Coordinated Total Water Monitoring	Nathan Edwards – South Dakota State University
2:05 p.m.	Upgrading a Long-Term Soil Moisture Monitoring Network Through the Oklahoma Hydronet	Gabriela Silva – Oklahoma State University
2:15 p.m.	Bringing Soil Moisture to South Alabama	Austin Clark - South Alabama Mesonet
2:25 p.m.	Activity – Introducing a Searchable Soil Moisture Network Inventory and Other NCSMMN Resources for Networks	Rocky Bilotta – NOAA NCEI Elise Osenga – CIRES, NOAA/NIDIS
2:35 p.m.	Session 8 – Q&A and Discussion	Moderator: Elise Osenga - CIRES, NOAA/NIDIS
2:45 p.m.	**Coffee Break**	
Session 10: Long-Term Monitoring: Coweeta | Moderator: Stephanie Connolly		
3:15 p.m.	The Role of Long-Term Monitoring in the U.S. Forest Service Mission	Stephanie Connolly – USDA Forest Service
3:30 p.m.	Instructions for June 11 Field Trip	Stephanie Connolly – USDA Forest Service
3:40 p.m.	Closing Remarks and Reflections from the Workshop: Gaps, Opportunities, and Next Steps Needed to Improve Applications of Soil Moisture Information for Natural Hazards, Thank You	Mike Cosh – USDA ARS Elise Osenga – CIRES, NOAA/NIDIS
4:00 p.m.	**End of Day**	

Due to limited space, we can only allow those who have registered to attend the field trip.
Full directions for the field trip will be provided to field trip registrants directly.

Thursday, June 11, 2026 – Field Trip – *Prior Registration Required for Attendance*		
Time (ET)	**Topic**	**Lead: Stephanie Connolly, USDA Forest Service**
8:00 a.m.	Gather for vans at designated location. Vans will load at 8:10 a.m. promptly.	
8:30 a.m.	Vans depart promptly at 8:30 a.m.	
4:30 p.m.	**Return to Hotel**	

2026 National Soil Moisture Workshop - Keynote Speakers

Ali Fares

About the Speaker:

Dr. Ali Fares is a Texas A&M University System Regents Professor at Prairie View A&M University and a leading expert in soil moisture sensing, with over 30 years of experience in sensor technologies and applications across land-grant institutions in Florida, Hawaii, and Texas, as well as industry experience in Australia. He has organized three international conferences on soil moisture and is widely published. His work focuses on applying smart technologies and AI to Food–Energy–Water–Health Nexus challenges. Ranked in the top 1% of scholars globally by ScholarGPS, he has secured over $110 million in funding, testified before Congress, contributed to the Fifth National Climate Assessment, and to the 2026 Presidential AI Challenge. He has also edited several books with UNESCO, Springer, and Elsevier, and holds graduate degrees from the University of Florida and a B.S. from Tunisia.

About the Talk:

"Soil Moisture for Natural Hazards: Challenges, Data Gaps, and Emerging Data-Driven Opportunities"

Soil moisture is a key link across natural hazards and public health, but current limitations in its measurement and application remain significant. Key challenges include scale mismatches and data gaps, but these exist alongside emerging advances in sensing, data integration, and machine learning to improve hazard prediction and decision-making.

Michael Ward

About the Speaker:

Michael (Mike) Ward is the North Carolina Fire Manager at the Nature Conservancy. He has over 30 years of experience in conservation, restoration, and naturalist guide work. He is a passionate outdoorsman and has worked to protect natural landscapes in on-the-ground conducting controlled burns and fighting wildfires, as well as working in planning and leadership positions. Mike has a Bachelor's Degree in Natural Resource and Conservation Ecology from the University of Florida Agricultural and Life Sciences. He has worked for the U.S. Forest Service, the National Park Service, the Fish and Wildlife Service, and as a vehicle mechanic for the U.S. Army.

About the Talk:

"Burning Questions – Using Soil Moisture to Support Wildland Fire and Habitat Restoration"

In the wildland fire business, soil moisture information is used to inform critical decisions regarding indicators of fire danger such as fuel drying, combustion-potential of duff and organic soils, and more. Soil moisture can help to inform land management and restoration decisions and support critical choices in the challenging space of wildland fire management, prediction, and response.

National Soil Moisture Workshop Poster List

Agricultural Resilience and Risk Management

Andres Hernandez, University of Texas Rio Grande Valley
Soil Moisture Under Solar Panels in a Vineyard: A Case Study to Support Drought Tracking

Srijana Chaudhary, Prairie View A&M University
Investigating the Relationships Between Soil Health and Meteorological Variables in the Southern Texas Environment

Drought Characterization

C. Prakash Khedun, South Carolina Water Resources Center, Clemson University
A Multivariate Analysis of Drought Duration and Severity in a Warming Climate

Peter Goble, Colorado State University
Using Downscaled NASA Land Data Assimilation Products to Monitor Water Systems in Colorado

Hazards Assessments: Landslides

Thomas A. Stanley, University of Maryland Baltimore County
Assessing Soil Moisture Products for the Cumberland Plateau

Land Surface Interactions

Manh-Hung Le, NASA Goddard Space Flight Center
Statistical and Machine Learning for Improving the Utility of Soil Moisture Networks for Satellite-Based Soil Moisture Product Assessment in the Upper Missouri River Basin

Nyamekye Joshua Okyere, Desert Research Institute
Microsite Influence on Soil Moisture, Temperature and Post-Fire Hydrophobicity

Networks or Sensor Validation

Edward Ayres, NEON, Nattelle
Validating Sensor-Based Soil Moisture Measurements for a National-Scale Network

Todd Caldwell, Desert Research institute
NICE Net: A Statewide Agricultural Climate and Reference Evapotranspiration Monitoring Network for Nevada

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Virtual Attendance

Join ZoomGov Meeting

A meeting link and passcode will be released the week prior to the workshop to all registered attendees